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THE CH-146 GRIFFON:

UNDERRATED AND OVER CRITICISED?

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ABSTRACT

Since the announcement in 1992 to acquire the CH-146 Griffon helicopter, the project and the aircraft have been the subject of much criticism. This essay examines the Griffon project to determine how much of this criticism, if any, is justified. This includes a review of the requirement for a new aircraft and a detailed look at the acquisition process followed to acquire the Griffon. The aircraft's shortcomings are examined to determine both the impact on the Griffon's ability to fulfil its mission and the extent to which corrective action is possible or underway. This will be followed by an examination of the operational performance of the Griffon using Kosovo as a case in point. It will be shown that the Griffon acquisition was a successful project and that the aircraft not only met the stated requirements but also can successfully undertake the roles for which it was procured.

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INTRODUCTION

The integration of the three military services into the Canadian Forces (CF) in the late 1960s also led to the consolidation of all Canadian Army air assets under the command of the newly formed 10 Tactical Air Group (10 TAG). This Group's mission was to provide tactical aviation support to the land element, known initially as Force Mobile Command (FMC) and later as Land Forces Command (LFC). Initially 10 TAG consisted of both fixed wing and rotary wing aircraft, but the former were later transferred to Fighter Group and Air Transport Group when Air Command was formed in 1972. However, 10 TAG was still able to provide credible support to the land forces as a result of a major helicopter procurement programme that commenced the same year. At the time, the acquisition of fifty CH-135 Twin Huey Utility Tactical Transport Helicopters (UTTH) and seventy-four CH-136 Kiowa Light Observation Helicopters (LOH) put 10 TAG's fleet at the leading edge of technology and capability. This already impressive capability was further enhanced with the procurement of eight CH-147 Chinook Medium Transport Helicopters (MTH) in 1976.

However, by the middle of the 1980s it was recognized that this fleet was quickly becoming outdated and in need of a major upgrade or replacement. Studies were initiated to determine the best course of action to ensure that effective support could be provided to FMC into the future. Operating a small Chinook fleet with many unique systems was judged to be too costly and so this fleet was retired in 1991 with no replacement. Fiscal constraints and a changing environment at the end of the Cold War delayed action being taken on the remainder of

the helicopter fleet until a February 1992 study concluded that acquiring a single fleet of utility helicopters would be more economical than upgrading and maintaining a mixed fleet.[1] Several options were evaluated against the operational requirements and it was determined that the Bell 412 helicopter was the best choice. Cabinet approval was given to the Canadian Forces Utility Tactical Transport Helicopter (CFUTTH) project on 7 April 1992 and negotiations commenced with Bell Helicopter Textron Canada (BHTC). Treasury Board approval was granted on 8 September 1992 and was followed the next day by the award of a $1.293 billion contract to BHTC for one hundred helicopters, ninety of which would go to 10 TAG.[2]

The decision to acquire these new helicopters, designated the CH-146 Griffon, has turned out to be controversial. Criticism has included assertions that political imperatives overrode normal acquisition protocols, which led to the procurement of an aircraft that cannot meet the stated requirements. Condemnation has come from many sources, including the media, the Auditor General of Canada, and even aircrew assigned to fly the aircraft. This paper will examine the project and analyse the criticism voiced against the Griffon's record to date. The intent is to show that not only was the Griffon acquisition a successful project but also that the result was a versatile and capable aircraft that meets the Army's specifications and has the capability to surpass the requirements for which it was acquired.

[1] Michel Legault, "The CH-146 Griffon: Reflecting a New Philosophy of Defence Procurement," *Aviation Quarterly*, Vol 1, Number 2, 1994, p 19.

[2] The CH-118 Iroquois being used by Base Rescue Flights supporting fighter operations were also included in this fleet rationalization, which added to the required numbers and to the potential cost savings. Their replacement was part of the CH-146 project but for the purpose of this paper they will be excluded, as they do not provide support to the Army.

BACKGROUND

Tactical aviation describes those air assets that are normally under operational control of the land forces to provide continuous and dedicated support. This includes helicopters, light fixed-wing aircraft and Unmanned Aerial Vehicles (UAVs), of which the helicopter has become the most prevalent vehicle. In Canada's case, solely helicopters have filled this function for almost thirty years. The doctrinal role of tactical aviation is to provide support to the land forces through the provision of aerial firepower, reconnaissance and mobility.[3] From this role, and the tasks that have been derived from it, four distinct categories of helicopters have evolved: attack, reconnaissance, utility and medium transport. Although this is the ideal fleet mix, few countries can afford to maintain all four of these specialized fleets, and in particular attack helicopters. This has led to the fitting of specialized equipment and weapons to reconnaissance and utility helicopters in an effort to develop multi-mission helicopters. One of the best examples of this is the British Lynx, a utility helicopter that has variants configured to conduct anti-armour and reconnaissance missions. Although multi-mission aircraft have limitations that derive from inevitable compromises, they can still be effective. The Israeli Defence Force clearly demonstrated this through their successful use of the Hughes 500 during the 1973 Yom Kippur War. Designed for the reconnaissance mission, this aircraft had been converted to an armed[4] helicopter by adding a missile system and it played an instrumental part in halting the Syrian armoured advance.

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[3] Doctrinal discussions are based on information contained in B-GA-440/AF-000 *Tactical Helicopter Operations* (1998).

[4] By definition, an attack helicopter is one specifically designed to provide firepower, whereas an armed or anti-armour helicopter is one designed for other purposes but fitted with weapons to conduct either of these missions. Helicopters equipped solely with defensive weapons (i.e. door guns) are not included under the term armed helicopters.

Combat development studies have confirmed the doctrinal requirement for four types of helicopters.[5] Historically the CF has employed all but attack helicopters, but budgetary pressures in the late 1980s and the 1990s made it difficult to retain the breadth of capabilities possible with three types of helicopters. The retirement of the Chinook resulted in the loss of a medium lift capability and the Kiowa was so outdated that it had become irrelevant on the battlefield.[6] Operating without any form of sighting or sensing system, the Kiowa was unable to employ the standoff tactics critical for survival against modern weapon systems, a shortfall exacerbated by the Kiowa's lack of any defensive warning or counter-measure systems. Fitting such systems to the Kiowa would have required the replacement or upgrade of the engine and drive train, adding considerably to the cost. Beyond that, inadequate aircraft performance was adversely affecting the Kiowa's ability to conduct even non-warfighting tasks. Concerns that the Kiowa was incapable of operating at the high elevations in Central America resulted in 10 TAG borrowing Jet Rangers from the Basic Helicopter School for a United Nations deployment in 1990. Though the Twin Huey was still capable of adequately performing the utility role, it too was in need of costly upgrades to extend its service life. In particular, avionics and electronic upgrades were required to ensure the Huey remained interoperable with modern systems and survivable on the battlefield.

[5] Department of National Defence, *The Aviation Master Development Plan (4th Draft)* (Ottawa: DND Canada, 1995), p 1.

[6] Kevin Whale, "Unlike Camels, the Griffon Has Potential," *Defence Policy Review*, Vol VI – Issue 18 (December 19, 2000), p 16.

GRIFFON ACQUISITION

Faced with a deteriorating capability and recognizing the fiscal realities of the day, "the Commanders of both AIRCOM and LFC [agreed] to retire the recce helicopter, CH-136, in favour of retaining and acquiring a single fleet of utility tactical transport helicopters."[7] However, normal Treasury Board procedures were not followed during the acquisition process of the replacement fleet. Instead, the CFUTTH Project became "fast-tracked" and steps in the process were abbreviated or waived to shorten the acquisition cycle. The Statement of Requirements (SOR) detailing the operational expectations of the aircraft was not finalized until April 1993, seven months after the contract was awarded, and many of the necessary operational tests and evaluation steps were completed only after the helicopter began active service.

Not surprisingly, an examination by the Office of the Auditor General (OAG) found many faults with the way the project was managed; these shortcomings were described in Chapter 4 of the 1998 Report of the Auditor General of Canada. The report questioned the cost/benefit study that rationalized the procurement of a single fleet and suggested that the new fleet would cost 20 to 40 percent more to operate than the mixed fleet it was replacing.[8] This statement did not however give the whole picture as it considered only operations and maintenance (O&M) costs of the three fleets in their extant condition, thereby ignoring the cost of upgrading the old aircraft to extend their service life. Also ignored was the increased capability the new fleet would provide. This is an important factor as the more economical Kiowa made up more than half the mixed fleet but was no longer effective in performing even its basic tasks.

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[7] Department of National Defence, *The Aviation Master Development Plan…*, p 1.

[8] Office of the Auditor General, *1998 Report of the Auditor General of Canada* (Ottawa: Minister of Public Works and Government Services Canada), April 1998, p 4-20.

The report made much of the fact that neither extensive operational research studies nor rigorous risk assessments were completed prior to the fielding of the Griffon. This can be attributed to the dynamic acquisition process that has become necessary with the constantly changing world situation and rapid advancements in the technological field. It is no longer desirable to operate on a ten-year (plus) procurement cycle and go through the costly process to develop military specific equipment as was the practice during the Cold War. To reduce procurement timelines and to minimize costs, commercial-off-the-shelf (COTS) procurement has become prevalent with militaries. However, the risk must still be evaluated and testing must take place to ensure the product is acceptable for military applications, even if it has been proven commercially. Therefore, the OAG criticism is justified in the case of the Griffon. Operational testing was conducted, but only after full production was well underway. This resulted in changes being incorporated part way through the production schedule and modifications being required on aircraft that had already been delivered to units. Many of the deficiencies could have been discovered and corrected prior to fielding if a pause had been inserted into the production schedule to allow for an operational evaluation with the first few aircraft. However, this would have delayed the introduction of the fleet, which was still able to provide a valuable service despite some restrictions.

Fortunately, this omission did not adversely affect the project and the risk to DND was reduced by the way in which the contract was drafted. The Griffon was one of the first major procurements of a COTS product and the manner in which the project was conducted has been captured as a positive lesson learned in the NDHQ Acquisition Reform Guidelines.[9] One of the

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[9]Department of National Defence, "Commercial Off-the-Shelf – Acquisition Reform Guidelines," [http://admmat.dwan.dnd.ca/masd/english/library/acqrefovr/CommercialOfftheShelf.stm].

most valuable lessons arose from the stipulation that the prime contractor rather than DND be responsible for integrating all systems from the various suppliers into the platform and certify the airworthiness of the aircraft as a complete system. This proved advantageous to DND when troubles were encountered with software integration. BHTC has corrected many of the problems that were encountered during the fielding phase and is responsible for developing solutions for the remainder, all at the manufacturer's cost.

The Auditor General's report also criticized the Department of National Defence (DND) for not conducting a rigorous analysis of the requirements and options and for awarding a contract without competition, which resulted in the sole-source purchase of a system "with low capability…that cannot be fielded in mid-intensity conflict."[10] An overextended defence budget was acknowledged as a major contributing factor to this decision, but it was suggested that a more detailed analysis might have found that fewer, larger aircraft could have met the requirement at a reduced life cycle cost. However, this does not consider the political and industrial benefits aspects that have become significant facets of major military procurement decisions. Media coverage of the OAG Report held politicians rather than DND responsible for the sole-source nature of the contract. The awarding of the contract to a Quebec company was "seen as a balance to a contract awarded to an Ontario company for armoured vehicles at the same time."[11] It was suggested that the requirement to purchase one hundred aircraft was also politically driven. Specifically, it was argued that the military would have preferred simply to replace the Huey fleet and to continue with the Canadian Forces Light Helicopter (CFLH) Programme to replace the Kiowa with a role specific aircraft. Another consideration outside the

[10] Office of the Auditor General, *1998 Report*..., p 4-21.

[11] Sharon Hobson, "Canada's Griffon helicopter purchase brings mixed results," *Jane's Defence Weekly,* Vol. 30, No. 8, August 26, 1998, p 30.

control of DND was the ability of BHTC to commit to more than $500 million in Canadian value-added industrial regional benefits.

Overall, the acquisition of the Griffon should be considered a success from the project management perspective despite the problems and the unorthodox nature of the programme. All aircraft were delivered on schedule and even the OAG Report concluded that the project would probably meet its contract and cost performance objectives despite a number of additional requirements identified during the fielding phase. Indeed, the most recent estimates show that "objectives will be met for approximately $130 million less than the approved estimated cost."[12] Additionally, BHTC has claimed a total of $541.6 million direct and indirect industrial regional benefits, representing 107% of their overall commitment. It should also be noted that many of the problems identified with the Griffon project also arose in five other major acquisition projects examined at the same time; indicating perhaps that the system was flawed, not just the CFUTTH Project. These programmes were conducted during a time of considerable upheaval in National Defence Headquarters (NDHQ) and during a major reengineering of the material acquisition process. Many valuable lessons were derived from these projects and have been incorporated in a reformed acquisition process.

REPORTED SHORTCOMINGS

As noted in the OAG report, the goal of defence procurement is to build a defence capability, not just to buy platforms – ships, vehicles and aircraft – that may or may not perform in combat. In the opinion of the OAG, this goal was not attained with the purchase of the Griffon, as it does not meet the Army's requirements. Despite many successes using the Griffon,

[12] Department of National Defence, *2000-2001 Report on Plans and Priorities* (Ottawa: DND Canada, 2001), p 81.

this criticism has continued; the most recent was raised in an article published in the *Defence Policy Review* in November 2000. The areas subject to the most severe scorn are what are seen as an inadequate lift capability and a limited ability to conduct reconnaissance tasks.

Undeniably the Griffon is limited in lift capability when compared to utility helicopters such as the UH-60 Black Hawk; but this does not mean the Griffon is unable to provide the support that the land forces require. Criticism has focused on the inability to carry the Army's new light howitzer over a distance of 100 kilometres. The statement of requirements called for a helicopter capable of lifting a 3,100-pound payload over that distance. Whilst the Griffon achieved this objective under the ideal conditions that are commonly used as a standard for measuring aircraft performance, the howitzer that was delivered was 300 pounds heavier than planned, which causes problems for the Griffon as no flexibility has been built into the requirement. The Griffon is thus able to lift the gun only over a distance of about 25 kilometres, as fuel must be reduced to allow for the increased load weight. Critics of the Griffon acknowledge that the gun is heavier but still place the blame on the aircraft for the shortcoming, even though the Griffon met its requirements.[13]

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major effort to gather the resources of several squadrons to conduct a company-sized lift. Now each operational squadron can conduct this mission with just the support of their affiliated reserve assets. This allows each squadron and its supported brigade to conduct better training, thus improving the operational capabilities of both.

This is not to say that the Griffon does not suffer from lift limitations. As discussed in the *Defence Policy Review* article, the addition of mission kits and defensive systems does reduce the available payload capability of the aircraft. Rather than being unnecessary "goodies which [sic] break the camel's back"[14] these additions were sorely needed improvements that provide a quantum leap ahead in the capability of the Griffon and survivability of the crew. The cost of this increased mission flexibility is the requirement for the crew to perform more weight management than was required with previous aircraft. It is true that a Griffon fully equipped with a defensive electronic warfare suite (DEWS), cabin armour plating, door guns and other mission kits can not lift a full complement of eight troops. However, this configuration allows the Griffon to operate under threat conditions that would not have been acceptable with the Huey. Depending on the threat situation or the willingness to accept risk, some of this kit could be removed if full lift capability was imperative to mission accomplishment. Related to the weight issue is a justifiable complaint that the torque measuring system is too sensitive, leading to numerous over-torque incidents. This has led to crews being wary of using all available power and limiting the load they are willing to carry. A correction is being sought to eliminate this problem, which should relieve some of the frustration aircrew are experiencing with the aircraft. However, even with its limitations the Griffon has proved to be capable of providing the required lift support, and it adds flexibility to the type of missions that can be completed.

[14] Dale Grant, "The Griffon is Really a Camel," *Defence Policy Review*, Vol VI – Issue 16 (November 20, 2000), p 7.

Though the decision was made to focus on the lift requirements of the land forces, this does not mean the reconnaissance mission was given up entirely. The initial implementation plan for the Griffon called for two types of crew specialties, reconnaissance and utility. As the Commander 10 TAG pointed out to the OAG, "…a utility helicopter is not optimized for the conduct of reconnaissance missions…although if properly manned and equipped it could perform these tasks."[15] It was never envisioned that the Griffon would be capable of conducting close reconnaissance in the forward battlespace, but it is a suitable platform to perform surveillance tasks and direct artillery fire or close air support aircraft if required. This does not represent a reduction in capability, as the Kiowa was unable to perform the close reconnaissance role. Unfortunately, immediately prior to the introduction of the Griffon, 10 TAG experienced a rash of aircraft accidents. The Commander 10 TAG ordered a study, the Gagnon-Laliberte Study, which determined that the higher than normal accident rate arose primarily from over-tasking of 10 TAG personnel. Because the introduction of a new aircraft would only exacerbate the situation, the Commander decided to limit training to the utility mission and to put the reconnaissance role on hold at least until aircrew were comfortable with their primary tasks.

Although 1 Wing[16] is attempting to reacquire the reconnaissance capability, critics feel this is unrealistic because of the size of the aircraft. This would be a factor if the missions were conducted in the same manner as with the Kiowa in the past. However, technology will allow the Griffon to not only complete the mission but also to be more effective in its conduct. Off-the-shelf sensor packages can be attached to the aircraft to allow it to operate effectively at standoff ranges of four kilometres and beyond, keeping it outside the engagement range of most

[15] Office of the Auditor General, *1998 Report*…, p 4-22.

[16] The reorganization of the CF to reduce the number of headquarters in 1997 led to the elimination of HQ 10 TAG and 1 Wing HQ assumed responsibility for tactical aviation units.

weapon systems likely to pose a threat. At this range, the Griffon's profile is "nearly 5 times smaller than a Kiowa was at 1-2km, where it needed to be to be effective."[17] While in the past it was necessary for reconnaissance helicopters to be small to be survivable, better sensor packages and defensive suites have made size immaterial. Notably, many of the aircraft being used in the reconnaissance role today are of similar size to the Griffon and have proved to be very effective.

Although no extensive research has been conducted to determine the suitability of the Griffon in the reconnaissance role, a study was conducted to investigate the surveillance and target acquisition capability of the Griffon and of a generic UAV. This study, Iron Quarrel, required the aircraft to conduct reconnaissance forward of friendly troops and to cover gaps between battle positions in a mobile defence scenario against a capable enemy. The model used in this trial was a Griffon equipped with a basic thermal and optical sight but with a limited defensive suite, no armament, and no ability to call for artillery fire support. As might be expected in this aggressive scenario, aircraft losses were encountered during the war gaming. However some success was achieved, especially when the aircraft was supported by ground troops.[18] In reality, the aircraft has a much better defensive suite and improved sensor packages are now available. Hence, the Griffon would undoubtedly fair better if the study was redone using more realistic tactics and taking advantage of current technology. Thus, a properly equipped and operated Griffon could prove to be a valuable asset that should integrate well into the Army's current Intelligence, Surveillance and Target Acquisition (ISTAR) strategy.

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[17] Whale, "Unlike Camels, the Griffon Has Potential,"…, p 17.

[18] L. Willner and L.R. Mader, *Iron Quarrel: an initial investigation into the use of unmanned aerial vehicles and Griffon helicopters for battlefield surveillance and target acquisition* (Ottawa: Directorate of Operational Research (Joint & Land), 2000), p 35.

ACHIEVEMENTS ON OPERATIONS

Since acquisition, the Griffon has been involved in numerous domestic and international operations and has received considerable praise for its accomplishments. The operational deployment to Haiti early in the aircraft's introduction to service demonstrated confidence in the Griffon and its Integrated Logistics Support package. This faith was well placed as the aircraft successfully conducted every mission assigned to the unit. The Griffon has also proved reliable and capable when responding to National emergencies and was an instrumental part of relief efforts during the Saguenay and Winnipeg floods and the Ice Storm in Ontario and Quebec.[19] Edmonton based 408 Squadron was able to deploy to the Winnipeg flood of 1997 even though the unit was conducting conversion training and was still a long way from meeting operational ready status. Not only was the unit able to provide valuable support but also the newly converted technicians were able to maintain a 99% aircraft availability rate.[20] Griffons are currently deployed to Bosnia and are providing the required support, now more effectively than before as the threat assessment allowed for the removal of the armoured flooring.

Perhaps the deployment to Kosovo from June 1999 to June 2000 best demonstrates the capabilities of the Griffon. Eight aircraft were deployed to provide integral aviation support to the British-led Multinational Brigade (Center). The NDHQ deployment order anticipated that the unit would conduct surveillance and reconnaissance, command and liaison, casualty and medical evacuation, troop transport, movement of quick reaction forces and general logistic

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[19] Bob MacDonald, "Transcript – Bell Helo Textron in Mirabel – 30 1100h Jan 1998", p 4, [http://dgpa-dgap.mil.ca/dgpa/Transcr/1998Jan/98013011.htm].

[20] The Honourable Art Eggleton, "The Handover of the Final CH-146 Griffon Helicopter" Press release of speech during acceptance of last Griffon, 30 Jan 98, [http://131.137.96.10/eng/archive/ speeches/griffon_s_e.htm].

transport tasks.[21] This list includes all tasks conducted by tactical aviation in support of land forces with the exception of provision of firepower, and the unit successfully participated in all to a greater or lesser extent. This was a very demanding operation but the Griffon proved equal to the task. Because of the uncertainty of the threat, the Griffons were equipped with the full complement of defensive and survivability equipment. The resulting high operating weight, when combined with the high density altitude and confined landing zones prevalent in the theatre, meant that aircraft were operating close to the limits on most missions so that passenger loads had to be restricted.[22] This did not affect the aircraft's overall ability to provide support and demand for the Griffon was so high that the unit routinely overflew the generous 480 flying hours per month authorized for the mission by NDHQ.[23] The vast majority of missions conducted in Kosovo were reported under the reconnaissance and surveillance category. Of note, the first aircraft to operate in Kosovo were tasked with monitoring the withdrawal of Serbian forces from the Province, covering gaps for the NATO ground force reconnaissance assets. "The unit quickly adapted to a form of ground support operations not practiced since the Kiowa was retired…."[24] Once established in Kosovo, the Griffon was used extensively to monitor the Provincial border with Serbia and to provide a presence throughout the Brigade's assigned area of responsibility, which was too large to be covered effectively by ground troops. The Griffon was frequently called to attend ground disturbances to observe and report on the

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[21] NDHQ, *Mission Statement and Employment Guidance for the Kosovo Rotary Wing Aviation Unit – Operation Kinetic*, (D Air FE 2-8, 22 June 1999).

[22] Capt Richard Nantel, "The KRWAU," *Safety Digest*, Ed. 6/2000 (June 2000), p 3.

[23] 1 CAD HQ Winnipeg, *Op Kinetic – Flying Hours*, (3350-Op Kinetic, A3 Ops 072).

[24] Col Mike Ward, *et al*, "Task Force Kosovo: Adapting Operations to a Changing Security Environment," *Canadian Military Journal*, Vol. 1, No. 1 (Spring 2000), p 70.

situation or assist in tracking fleeing suspects; quick reaction teams were often inserted to establish roadblocks in support of these operations. The Griffon was also used to insert patrols, resupply troops, evacuate casualties, transport passengers and perform any other task normally assigned to utility helicopters.[25] In the end, the Griffon proved to be a capable aircraft and not a "piece of junk" as claimed by the opposition defence critic, Mr. Art Hanger, during the CTV news broadcast on 12 March 1999.[26]

POTENTIAL CAPABILITIES

Innovative use of the Griffon in Kosovo not only proved the aircraft's capabilities but also demonstrated the potential to expand its ability as a multi-mission aircraft. Although the current forward looking infrared (FLIR) mission kit has limitations, it was used to advantage on some missions. However, an Electro-optical Reconnaissance, Surveillance, Target Acquisition (ERSTA) system similar to one being evaluated for 1 Wing would have considerably increased the aircraft's reconnaissance capability, especially during initial entry into Kosovo. The ERSTA system would have allowed the crews to monitor ground disturbances from a safe distance and would have been more effective at observing the buffer zone with Serbia during border patrols. A 1998 evaluation of the Griffon's FLIR identified the requirement for an improved system and operational tests have been conducted to select a replacement. This enhancement will be funded under the original CFUTTH Project and is about to go to industry for bids on the contract.[27] The

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[25] Jon O'Connor, "Tactical Aviation: A Bird's Eye View From the Crow's Nest," *Op Kinetic*, (March 2000), p 9.

[26] Newsmedia Transcript, "CF criticized by Auditor General over Griffon purchase," [http://dgpa-dgap.mil.ca/dgpa/Transcr/1999Mar/99031201.htm].

[27] Whale, "Unlike Camels, the Griffon Has Potential,"…, p 16.

system will incorporate a FLIR and Day TV to ensure effective operation day or night and will also include a laser range-finder and designator. The acquisition of an ERSTA system will not only allow the Griffon to conduct current missions more effectively but will also provide a capability beyond that envisioned in the original SOR.

In order to exploit untapped potential, plans are being developed to arm the Griffon.[28] This would be a logical step once an ERSTA system has been obtained as this system would provide the sighting and laser systems required to acquire and track targets for the weapon system. Minimal modifications to the aircraft would be required as existing hard points could be used for mounting the weapon and the majority of the electronics would already be integrated into the ERSTA system. This concept is still in the early development stage but possible weapon systems include precision guided rockets, missiles or large caliber machine guns. With an ability to identify and engage targets from a standoff range of six to eight kilometres, the Griffon would provide a potent platform never before enjoyed by the Canadian Army. The ability not only to find a target but also to engage it offers an attractive capability well beyond the original expectations for this aircraft.

CONCLUSION

Throughout the 1970s and 1980s, credible aviation support was provided to the land forces in Canada with a capable fleet of light, utility and medium transport helicopters. However, these aircraft were quickly becoming outdated and in need of major upgrades or replacement. A decision was made in 1992 to retire the existing aircraft and obtain a single fleet of utility tactical transport helicopters. A contract was awarded for the delivery of one hundred

[28] Sharon Hobson, "Lt Gen Mike Jeffery – Canadian Chief of Land Staff," *Jane's Defence Weekly,* Vol. 34 No. 16, October 18, 2000, p 48.

Bell 412 helicopters, which were to be modified for military requirements and designated the CH-146 Griffon. This decision has proved to be controversial and there has been no shortage of criticism on the project and the aircraft.

The project was "fast-tracked" and the acquisition did not follow normal Treasury Board procedures. A review by the Office of the Auditor General of Canada found many faults with the way the programme was managed. The OAG Report severely criticized the Department of National Defence for not conducting a thorough option analysis prior to selecting the aircraft, but this may have been unfair considering the fiscal realities and political implications that came into play. The report also expressed concern that neither extensive operational research studies nor rigorous risk assessments were completed prior to the fielding of the aircraft. While this is true, it did not affect the success of the programme as all aircraft were delivered on schedule and the project has remained under budget. Though problems were encountered because of the unorthodox nature of the programme, most have been solved and a very capable aircraft was obtained in a much shorter time than normal. Many positive lessons were learned from this project and they have been incorporated into Acquisition Reform Guidelines.

The aircraft itself has also come under attack and claims have been made that it does not meet the requirements of the land forces. This is primarily due to the limited lift capability of the aircraft, which is further reduced with the addition of mission kits and protective equipment. However, with careful mission planning and weight management, the Griffon is capable of performing its tasks and the additional equipment has allowed it to complete missions that were not possible with the aircraft it replaced. Technology can be used to further exploit the capabilities of the aircraft and expand its role. The acquisition of an ERSTA system would

improve the reconnaissance capabilities and would pave the way for arming the helicopter to provide a capability that has never existed in Canada.

The Griffon has proved to be a versatile and capable aircraft and has demonstrated undeveloped capability that will allow it to exceed the requirements for which it was acquired. Despite its problems and limitations, the Griffon has been a success story and it should serve the country well for many years to come.

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